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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,160	08/18/2003	Dmitry M. Rudkevich	124263-1016	3568

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EXAMINER

DRODGE, JOSEPH W

ART UNIT PAPER NUMBER

1723

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/643,160

Applicant(s)

RUDKEVICH, DMITRY M.

Examiner

Joseph W. Drodge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 1/12/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0304.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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The substitute specification filed on January 12, 2004 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because: no reason for preparation of a substitute Specification can be found on the record.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Newly cited Internet Publication "Calixarenes, chemical chameleons" by Dienst et al in view of the Internet Publication of record by Rosokha et al entitled "Novel Arene Receptors as Nitric Oxide (NO) Sensors.

Dienst discloses calix[4]arene compounds coupled with at least one NO<sup>+</sup> cation, associated with charge-transfer reactions (being electrophilic, see page 389) that are useable both as sensors as in claims 1-10 (page 387) or for purifying chemical compounds or fluids containing such as in claims 11-18 by facilitated membrane transport (see introduction on page 387 and page 390 concerning cyclodextrins).

The claims differ in requiring that the NO<sub>x</sub> cations form a complex. Rosokha teaches such at the first paragraph of page 5620. It would have been obvious to one of ordinary skill in the art to have considered the device of Dienst to inherently contain NO<sub>x</sub> complexes, since Rosokha teaches that formation of complexes is a result of kinetic and thermodynamic forces acting on the calixarenes and the NO cations.

The following dependent claim limitations are taught: optic properties for claim 2 (Dienst top of page 391), disassociation of the complex for claim 3 (Rosokha "release kinetics" page 391), decolorizing for claim 4 (Dienst at page 5621 re reversible color changes), cone formation and solutions thereof for claims 5,6,7 and 12 (Dienst at page 388), storage device formed for claims 8,13,14,16, and 17 (Dienst teaches formation of cavities for storage at page 390), stabilizing by Lewis Acids for claim 10 (Dienst teaches use of HNO<sub>3</sub> acid at page 389), transferring of NO<sup>+</sup> cations to a substrate for claims 9 and 18 (Dienst teaches such at page 391 using supported liquid membranes).

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Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over The Publication by Rosokha et al in view of Batelaan et al patent 5,434,208. Rosokha discloses claim limitations of a complex of calixarene and nitrosonium (page 5620, 1<sup>st</sup> paragraph) and reversible complexing and optical means of detecting (page 5620, 3<sup>rd</sup> paragraph). The claims differ in requiring use thereof as an optical switch. Batelaan et al teach calixarenes being useful as optical switches at column 5, lines 49-53. It would have been obvious to one of ordinary skill in the art to have employed the devices disclosed by Rosokha as optical switches, since Batelaan et al teach that the disclosed compounds have excellent hyperpolarization properties, hence make excellent optical switches.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lamartine et al patent 6,136,071 is made of record for teaching that calix[4]arene compounds are employed to separate low-molecular weight nitrogen-containing gas contaminants from gaseous fluid mixtures being purified.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

April 28, 2005

  
JOSEPH DRODGE  
PRIMARY EXAMINER